CLAIMS

1. An apparatus for reducing tires, including:

a rotating cutting head having multiple cutting inserts supported on the outer circumference thereof and rotatable therewith;

a feed mechanism for transferring tire portions to said rotating cutting head;

an anvil having an anvil edge disposed parallel to said outer circumference of said cutting head and spaced closely therefrom, whereby said anvil edge supports said tire portions as said multiple cutting inserts rotate and shear through said tire portions and reduce said tire portions to small fragments.

2. The apparatus for reducing tires of claim 1, wherein said rotating cutting head includes a plurality of substantially similar cutting plates, said cutting plates being disposed in stacked, abutting, axial alignment.

3. The apparatus for reducing tires of claim 2, wherein each of said cutting plates includes a central hole therethrough, and an arbor extending through the central holes of said plurality of cutting plates to support said stacked, abutting, axial alignment.

4. The apparatus for reducing tires of claim 3, wherein each of said cutting plates includes a plurality of lugs extending outwardly from the circumference thereof, and means for supporting each of said cutting inserts on one of said lugs.

5. The apparatus for reducing tires of claim 4, wherein said cutting inserts each have a cutting edge extending radially outwardly beyond the outermost extent of the lugs supporting the cutting inserts.

6. The apparatus for reducing tires of claim 4, wherein said lugs are spaced in equal angle fashion about said circumference of each of said cutting plates.

7. The apparatus for reducing tires of claim 6, wherein said arbor extends along an axis of rotation, and further including means for establishing an angular offset between each successive cutting plate in said stacked, abutting relationship, said angular offset extending about said axis of rotation in a regular, incremental fashion.

8. The apparatus for reducing tires of claim 7, wherein said means for establishing an angular offset includes a keyway channel extending in said arbor parallel to said axis of rotation.

9. The apparatus for reducing tires of claim 8, wherein said means for establishing an angular offset includes a keyway formed in the inside diameter of said central hole of each of said cutting plates, each keyway being dimensioned to engage a key secured in said keyway channel of said arbor.

10. The apparatus for reducing tires of claim 9, wherein said keyways in said cutting plates are positioned in selectively varied angular relationship to establish said angular offset of said stacked, abutting cutting plates.

11. The apparatus for reducing tires of claim 10, wherein said angular offset of successive cutting plates in said stacked, abutting relationship defines a placement pattern for said cutting inserts of multiple helical paths in shallow progressive angles about the circumference of said cutting head.

12. The apparatus for reducing tires of claim 11, wherein said shallow progressive angles are selectively variable in accordance with said selectively varied angular relationship of said keyways in said cutting plates.

13. The apparatus for reducing tires of claim 1, wherein the spacing of said anvil edge from said cutting head outer circumference is selectively variable to determine the size of said tire fragments.

14. The apparatus for reducing tires of claim 1, wherein said feed mechanism is operated at a selectively variable infeed rate to control the processing rate of said apparatus.

15. The apparatus for reducing tires of claim 1, wherein said rotating cutting head is driven at a selectively variable rotational speed.

16. A rotating cutting head assembly, including:

a plurality of substantially similar cutting plates, said cutting plates being disposed in stacked, abutting, axial alignment;

each of said cutting plates including multiple cutting inserts supported on the outer circumference thereof;

said cutting inserts defining a regular pattern on the periphery of said cutting head.

17. The rotating cutting head assembly of claim 16, wherein each of said cutting plates includes a central hole therethrough, and an arbor extending through the central holes of said plurality of cutting plates to support said stacked, abutting, axial alignment.

18. The rotating cutting head assembly of claim 17, wherein each of said cutting plates includes a plurality of lugs extending outwardly from the circumference thereof, and means for supporting each of said cutting inserts on one of said lugs.

19. The rotating cutting head assembly of claim 18, wherein said cutting inserts each have a cutting edge extending radially outwardly beyond the outermost extent of the lugs supporting the cutting inserts.

20. The rotating cutting head assembly of claim 18, wherein said lugs are spaced in equal angle fashion about said circumference of each of said cutting plates.

21. The rotating cutting head assembly of claim 20, wherein said arbor extends along an axis of rotation, and further including means for establishing an angular offset between each successive cutting plate in said stacked, abutting relationship, said angular offset extending about said axis of rotation in a regular, incremental fashion.

22. The rotating cutting head assembly of claim 21, wherein said means for establishing an angular offset includes a keyway channel extending in said arbor parallel to said axis of rotation.

23. The rotating cutting head assembly of claim 22, wherein said means for establishing an angular offset includes a keyway formed in the inside diameter of said central hole of each of said cutting plates, each keyway being dimensioned to engage a key secured in said keyway channel of said arbor.

24. The rotating cutting head assembly of claim 23, wherein said keyways in said cutting plates are positioned in selectively varied angular relationship to establish said angular offset of said stacked, abutting cutting plates.

25. The rotating cutting head assembly of claim 24, wherein said angular offset of successive cutting plates in said stacked, abutting relationship defines a placement pattern for said cutting inserts of multiple helical paths in shallow progressive angles about the circumference of said cutting head.

26. A method for reducing a vehicle tire, including the steps of:

providing a rotating cutting head having a plurality of cutting inserts with multiple shearing edges protruding from the circumference of said cutting head;

severing the sidewall and tread of the tire in the same plane to open out the torus of the tire;

cutting away the bead portion of the tire;

providing a feed mechanism for flattening the tire tread portion and feeding the tire tread portion endwise into said rotating cutting head; and,

collecting the resulting tire fragments.

27. The method for reducing a vehicle tire of claim 26, further including the step of providing an anvil edge between said feed mechanism and said cutting heat to support the infeed end of said tire tread portion adjacent to said cutting head.

28. The method for reducing a vehicle tire of claim 27, further including varying the spacing of said anvil edge from said cutting head to vary the size of the resulting tire fragments.

29. The method for reducing a vehicle tire of claim 28, further including the step of arranging said cutting inserts in a pattern of multiple helical paths of shallow progressive angles about said circumference of said cutting head.

30. The method for reducing a vehicle tire of claim 29, further including the step of selectively changing said shallow progressive angles of said multiple helical paths.